REMARKS

Please reconsider the application in view of the above amendments and the following remarks. Applicants thank the Examiner for carefully considering this application.

Disposition of Claims

Claims 1-5, 8, 11, 15, 18, 19, 22, 25, and 31-42 were pending in the present application. By way of this submission, claims 31, 32, 34, 35, 37, and 38 are canceled without prejudice or disclaimer. Accordingly, claims 1-5, 8, 11, 15, 18, 19, 22, 25, 33, 36, and 39-42 are now pending in the present application. Claims 1, 11, and 23 are independent. The remaining claims depend, either directly or indirectly, from claims 1, 11, and 23.

Examiner Interview

Applicants would like to thank the Examiner for the courtesies extended during the interview on March 17, 2009.

Claim Amendments

By way of this submission, claims 1, 11, 23, 39, and 40 are amended for clarification. Specifically, independent claims 1, 11, and 23 are amended to incorporate the subject matter of canceled claims 32, 34, and 38, respectively. Further, claims 39 and 40 are amended to correct dependency and antecedent basis issues, respectively. Applicants respectfully assert that no new matter is introduced by way of these amendments as support for these amendments may be found, for example, in paragraphs [0034], [0045], and [0054], and in the corresponding figures of the originally-filed specification, and in the originally-filed claims.

Rejections under 35 U.S.C. § 112

Claims 34, 35, and 40 stand rejected under 35 U.S.C. § 112 as being indefinite for failing to particularly point out and distinctly claim the subject matter. Specifically, the Examiner contends that with respect to claim 34, it is unclear how the first simulation image is executed on the test simulator as the parent claim 11 stipulates that the first simulation image is executed on the reference simulator. Further, the Examiner contends that with respect to claim 35, it is unclear how the second simulation image is executed on the reference simulator as the parent claim 11 stipulates that the second simulation image is executed on the test reference simulator. Also, the Examiner contends that claim 40 recites the limitation "the user data", and that there is insufficient antecedent basis for this limitation. *See* Action, page 2. By way of this submission, claims 34 and 35 are canceled. As for claim 40, for the reasons set forth below, this rejection is respectfully traversed.

By way of this submission, claim 40 is amended to refer to "a user data", instead of "the user data". The Examiner will appreciate that there is no longer insufficient antecedent basis for this limitation in claim 40. Accordingly, withdrawal of this rejection is respectfully requested.

Rejections under 35 U.S.C. § 103

Claims 1-5, 8, 11, 15, 18, 19, 22, 25, 31, 32, 35, and 37-42 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,141,630 (hereinafter "McNamara"), in view of U.S. Patent No. 6,182,258 (hereinafter "Hollander"), in view of U.S. Patent No. 7,178,063 (hereinafter "Smith").

Claims 33 and 36 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over McNamara, in view of Hollander, in further view of U.S. Patent No. 5,812,416 (hereinafter "Gupte"). By way of this submission, claims 31, 32, 35, 37, and 38 are canceled without prejudice or disclaimer, so the rejection is moot as to those claims. As for the remaining claims, for the reasons set forth below, this rejection is respectfully traversed.

As an initial matter, Applicants believe the Examiner inadvertently rejected a previous version of the claims instead of the most recent version of the claims filed on August 15, 2008 in the Response to Office Action dated May 15, 2008 (hereinafter "Prior Response"). *See, e.g.,* Action, pages 3 and 4. This is improper. Accordingly, this response is based on the assumption that the Examiner intended to respond to the most recent version of the claims filed in the Prior Response. If Applicants' assumption is incorrect, Applicants respectfully request the Examiner re-identify the rejected claims.

MPEP § 2143 states that "[t]he key to supporting any rejection under 35 U.S.C. 103 is the clear articulation of the reason(s) why the claimed invention would have been obvious. The Supreme Court in KSR noted that the analysis supporting a rejection under 35 U.S.C. 103 should be made explicit." Further, when combining prior art elements, the Examiner "must articulate the following: (1) a finding that the prior art included each element claimed, although not necessarily in a single prior art reference, with the only difference between the claimed invention and the prior art being the lack of actual combination of the elements in a single prior art reference..." *See* MPEP § 2143(A).

Amended independent claim 1 requires, in part:

(i)   a first simulation image and a second simulation image exist;

(ii)   a reference simulator execute the first simulation image to generate golden data;

(iii)   a test simulator execute the second simulation image to generate test data;

(iv)   a portion of the test data be compared with a portion of the golden data to ***debug the test simulator***; and

(v)   the reference simulator executes the first simulation image in lockstep with execution of the second simulation image.

Amended independent claims 11 and 23 have similar requirements.

The Examiner contends that the combination of McNamara, Hollander, and Smith teaches or suggests (*i*)-(*v*). The Examiner admits that McNamara fails to teach or suggest wherein the plurality of mapping rules map an internal hierarchy of the first implementation to an internal hierarchy of the second implementation. Instead, the Examiner contends Hollander teaches or suggests this. The Examiner also admits that the combination of McNamara and Hollander fails to teach or suggest wherein the comparison result is used to debug the test simulator by correcting and displaying an error detected in the comparison result. Instead, the Examiner contends Smith teaches or suggests this limitation. *See* Action, pages 3 and 4. Applicants respectfully disagree with the Examiner's contentions. Specifically, Applicants assert that the Examiner is mischaracterizing the prior art references, which is improper.

Briefly, McNamara discloses a system and method for *verifying a circuit design*. A design description of the circuit and a reference description of the circuit are used to generate a simulated design model (SDM) of the circuit and a simulated reference model (SFM) of the circuit, respectively. A test bench (*i.e.,* a simulator) accepts a test vector, concurrently applies the test vector to both the SDM and the SFM, and then compares the output of the SDM and the output of the SFM. The test vector pertains to a specific area of the circuit. By comparing the output of the SDM and the output of the SFM, errors in said area of the circuit can be identified, and additional test vectors can be created to further isolate the error and/or cover additional areas of the circuit. *See* McNamara, Abstract, column 5, lines 49-59; column 6, lines 60-67; column 7, lines 1-37; and Figure 5.

Further, Hollander discloses a system and method for *verifying a circuit design*. A test generator module creates verification tests from a functional description of the circuit. These verification tests are available to a simulator of the circuit design. *See* Hollander, Abstract.

However, McNamara and Hollander fail to teach or suggest (*i*)-(*iv*). Rather, as discussed above, McNamara and Hollander are solely focused on *verifying a circuit design* through simulation. Moreover, a close reading of McNamara and Hollander reveals that they attribute any error or mismatch in the output(s) of the simulation to one or more errors in said circuit design. Thus, it is implicit that McNamara and Hollander assume the simulator itself is operating correctly. In other words, McNamara and Hollander do not even contemplate the source of a simulation error actually being a flawed simulator (*i.e.,* instead of a flawed circuit design under simulation). Accordingly, as McNamara and Hollander assume a flawless simulator, McNamara and Hollander

do not and cannot teach or suggest debugging the simulator itself to find whether the simulator has flaws. Applicants assert that verifying a circuit design is **_not_** the same as debugging a circuit simulator, and the Examiner's attempt to mischaracterize the teachings of McNamara and Hollander is wholly improper. Therefore, McNamara and Hollander do not satisfy at least requirements (*i*)-(*iv*) of the amended independent claims.

Further, Hollander fails to teach or suggest (*v*). Hollander discloses a co-verification request that is issued at the end of each transaction performed by a C program. *See* Hollander, column 12, lines 40-48. The Examiner attempts to equate the issuance of the co-verification request with the execution of the first simulation image in **_lockstep with_** the second simulation image. *See* Action, pages 7 and 8. Applicants respectfully disagree with this characterization. The co-verification request occurs "at the end of each transaction" (*See* Hollander, column 12, line 45). Clearly, "at the end of each transaction" represents discrete points after a transaction has concluded. The claimed requirement (*v*) discloses execution of the first simulation image in **_lockstep with_** the second simulation image, or execution of the first simulation *concurrent to* execution of the second simulation. Support for this concept is provided by the specification at, *e.g.*, [0054]. Concurrent execution of two simulation images is clearly a distinct concept from issuance of a request at the end of each transaction. The Examiner will appreciate that these concepts are *not* equivalent. Accordingly, Hollander also fails to teach or suggest at least requirement (*v*) of the amended independent claims.

As described above, McNamara and Hollander, whether viewed separately or in combination, do not teach or suggest each and every limitation of the amended independent claims.

Further, Smith does not teach or suggest that which McNamara and Hollander lack as evidenced by the fact that the Examiner relies on Smith solely for the purpose of teaching using a reference software and test software under development and comparing the two to debug the test software under development. *See* Action, page 4. Further, Gupte does not teach or suggest that which McNamara, Hollander, and Smith lack as evidenced by the fact that the Examiner relies on Gupte solely for the purpose of teaching generating golden data before test data. *See* Action, pages 8 and 9. Thus, McNamara, Hollander, Smith, and Gupte, whether viewed separately or in combination, do not teach or suggest each and every limitation of the amended independent claims. Therefore, the Examiner's contentions do not support the rejections of independent claims 1, 11, and 23. Claims 2-5, 8, 15, 18, 19, 22, 25, and 39-42 depend, either directly or indirectly, from independent claims 1, 11, and 23. Accordingly, the Examiner's contentions also do not support the rejection of claims 2-5, 8, 15, 18, 19, 22, 25, and 39-42, and withdrawal of this rejection is respectfully requested.

Conclusion

Applicants believe this submission is fully responsive to all outstanding issues and places this application in condition for allowance. If this belief is incorrect, or other issues arise, the Examiner is encouraged to contact the undersigned or his associates at the telephone number listed below. Please apply any charges not covered, or any credits, to Deposit Account 50-0591 (Reference Number 33226/324001).

Dated: March 30, 2009   Respectfully submitted,

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